**CLAIMS:**

I claim:

1. A high phase order induction machine drive system, comprising

a) an induction motor having more than three phases, and having at least two terminals for each phase, and

b) an inverter system for the synthesis of alternating current of as many phases as the number of phases that said induction motor comprises, said inverter system electrically connected to said terminals of said phases of said induction motor with a mesh connection, said alternating current of said phases of said inverter system having variable electrical phase.

2. The high phase order induction machine drive system of claim **1** wherein said at least two terminals comprise two terminals.

3. The high phase order induction machine drive system of claim **2** wherein the inverter is connected to said terminals with half bridge inverter outputs.

4. The high phase order induction machine drive system of claim **2** wherein said motor is wound with full span concentrated windings.

5. The high phase order induction machine drive system of claim **4** wherein said half bridge inverter outputs are connected with a mesh connection to said winding terminals.

6. The high phase order induction machine drive system of claim **2** wherein said half bridge inverter outputs are connected with a mesh connection to said winding terminals.

7. The high phase order induction machine drive system of claim **2** wherein said mesh connection having the highest possible skip number that may be rotationally applied to said terminals.

8. The high phase order induction machine drive system of claim **2** wherein said mesh connections arranged to drive current of as close to 120 electrical degrees as possible to each phase, for the number of phases comprised by said motor.

9. The high phase order induction machine drive system of claim **8** wherein said control electronics for adjusting the electrical angles of the driving connections between the inverter and the motor being arranged to drive the third harmonic of the fundamental current to the motor terminals in response to a signal to increase the impedance of the motor.

10. The high phase order induction machine drive system of claim **9** wherein said motor comprising 17 phases and wherein said mesh connection arranged with a skip number of 5 between each pair of terminals of the same winding.

11. The high phase order induction machine drive system of claim **2** wherein said control electronics are designed to drive current of increased electrical angles to said terminals in response to a signal to increase the impedance of the motor

12. The high phase order induction machine drive system of claim **2** wherein said more than three phases being an odd number of phases and wherein each phase comprises two terminals and wherein the number of connected terminals equals N, and wherein the two terminals of each phase are separated in one circular direction by 1/2(N-3) other connected terminals.

13. The high phase order induction machine drive system of claim **11** wherein said control electronics are arranged to increase the electrical angles of the current to the terminals in response to a signal to increase the impedance of the motor

14. The high phase order induction machine drive system of claim **7** wherein said control electronics are designed to multiply the electrical angle of each of the terminals by (N-2) in response to a signal to increase the impedance of the motor.

15. The high phase order induction machine drive system of claim **7** wherein said control electronics are designed to multiply the electrical angle of each of the terminals by the same number in response to a signal to increase the impedance of the motor.

16. The high phase order induction machine drive system of claim **2** wherein said mesh connection comprises one inverter terminal connected to two adjacent winding terminals.

17. The high phase order induction machine drive system of claim **2** further comprising contactors for the switching to a second mesh connection of a different skip number from the first mesh connection, whereby the impedance of the motor may be mechanically varied.

Class 318

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18. A method for varying the impedance of a motor, comprising

a) connecting a motor having more than three phases with a mesh connection to an inverter system, and,

b) driving the terminals of the mesh connection by the inverter, and

c) varying the inverter output phase angles of the terminals

19) The method of claim **18** wherein said step of varying the inverter output phase angles of the terminals comprising multiplying each of the phase angles by the same number to increase the impedance of the motor.

20) The method of claim **19** wherein the number of phases being odd and equaling N, and wherein said step of multiplying the phase angles by the same number comprises multiplying the phase angles by an integral multiple.

21) The method of claim **19** wherein the number of phases being odd and equaling N, and wherein said step of multiplying the phase angles by the same number comprises multiplying the phase angles by an odd integral multiple.

22) The method of claim **19** wherein the number of phases being odd and equaling N, and wherein said step of multiplying the phase angles by the same number comprises multiplying the phase angles by (N-2).

23) The method of claim **19** wherein the step of multiplying the phase angles by the same number comprising multiplying the

phase angles by the product of the formula ((360N/R) +1)/S+1, where N is any integer, R is the angle between adjacent terminals in degrees, and S is the skip number between the two terminals of each phase.

24) The method of claim **18** wherein the step of varying the inverter phase angles of the terminals comprising the step of providing the terminals with the odd order harmonic that corresponds most closely with required impedance.

25) The method of claim **18** wherein the step of varying the inverter phase angles of the terminals comprising the step of providing the terminals with increasing saturation of an odd order harmonic.

26) The method of claim **18** wherein the step of varying the inverter phase angles of the terminals comprising the step of providing the terminals with a plurality of odd order harmonics.

27) The method of claim **18** wherein said step of connecting is done by connecting the windings to the inverter terminals with a mesh connection of the type that will cause the phase angle across each winding to be nearly but not exactly 120 degrees of fundamental current, and wherein said step of varying the inverter output phase angles of the terminals is done by adding third harmonic content to the drive waveform of the inverter.

28) The method of claim **18** wherein said step of adding third harmonic is done by gradually increasing the saturation of third harmonic content in the waveform.

29) The method of claim **18** wherein said step of connecting is done by connecting the windings to the inverter terminals with a mesh connection of the type that will cause the largest phase angle possible across each winding of fundamental current.

30) The method of claim **18** wherein said step of varying the inverter output phase angles of the terminals is done by adding all of the odd order harmonics to the inverter drive waveform up to the number of phases of the motor.

~~31) A high phase order motor connected to inverter output elements with a mesh connection.~~

~~32) The high phase order motor of claim **31**, in which the skip number of the mesh connection is the highest skip number possible which allows for rotational symmetry.~~

~~33) The high phase order motor of claim **31**, in which the skip number of the mesh connection is zero.~~

Add A1

Add B4